



U.S. Department of Energy
Energy Efficiency and Renewable Energy

federal energy management program

THE FEDS.....TAKING STEWARDSHIP SERIOUSLY



**U.S. Green Building Council's
International Conference and Expo
Atlanta, GA
November 10, 2005**

Beverly Dyer, LEED A.P.

Federal Energy Management Program,
Department of Energy



Why FEDs are Engaged

- **Sustainability efforts now could save 15.9 trillion BTUs annually within the next 10 years in the federal Government.**
 - **Federal government spends more than \$20B annually on new or substantially renovated facilities**
 - **20% of federal buildings will be new construction in the next 10 years**
 - **New construction can account for 1/4 of the total energy reduction needed to meet Energy Policy Act (EPact05) energy goals by 2015**



- **Energy Policy Act of 2005**
 - 109 (2) (II) “...cost effective sustainable design principles are applied to the siting, design, and construction of *all* new and replacement buildings”
- **OMB A-11**
 - Incorporating sustainable design as standard practice (life-cycle cost analysis, energy/water efficiency, indoor environmental quality) throughout the Federal Sector
- **Executive Order 13123**
 - 403 (d) “...develop sustainable design principles...apply such principles to the siting, design, and construction of new facilities.”



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Interagency Sustainability Working Group (ISWG)

“Being able to connect with others across the federal sector ... improves the quality of our work. The networking has resulted in new projects and new ideas on how to improve the performance of green buildings.”





Design Guidance

Building Types
Space Types
Design Objectives
Products & Systems

Project Management

Delivery Teams
Planning & Development
Delivery & Controls

Mandates / References

Federal Mandates
Publications
Case Studies
Participating Agencies
Industry Organizations
Related Links

Tools

News, Events & Training



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LEED®-DoD Antiterrorism Standards Tool

Tools Index > - [LEED-DoD Antiterrorism Standards Tool](#)

Introduction

[How To Use This Tool](#)

[General Issues](#)

Application

[Relevant Codes & Standards](#)

[Additional Resources](#)

Legend

■	Complimentary requirements
■	Conflicting and complimentary requirements
■	Conflicting requirements
■	Not conflicting or complimentary, but have related considerations

LEED® Credit		Antiterrorism Standard																					
Sustainable Sites		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
SS-P1	Erosion & Sedimentation Control	■		■																			
SS-1	Site Selection	■	■																				
SS-2	Development Density	■	■																				
SS-3	Brownfield Redevelopment	■	■																				
SS-4.1	Alternative Transportation, Public Transportation Access	■																					
SS-4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	■	■																				
SS-4.3	Alternative Transportation, Alternative Fuel Vehicles	■		■	■	■											■						
SS-4.4	Alternative Transportation, Parking Capacity	■		■	■	■																	
SS-5.1	Reduced Site Disturbance, Protect or Restore Open Space	■	■		■															■			
SS-5.2	Reduced Site Disturbance, Development Footprint	■	■	■		■			■											■			
SS-6.1	Stormwater Management, Rate and Quantity	■	■	■		■			■						■								



Indicators of Success

- **9 Agencies have sustainable construction policies**
- **LEED certified Federal buildings**
 - **Average energy consumption 25% below ASHRAE 90.1-1999**
 - **1/2 of the buildings reduced water consumption by 30%**
 - **3/4 of the buildings eliminated use of potable water for landscaping**



U.S. Department of Energy
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LEED Certified Federal Buildings

Federal Agency	Project	Certification Level
Department of Defense – Navy	Energy & Sustainable Design Demonstration Facility	Gold
Department of Interior - National Park Service	Carl T. Curtis Midwest Regional Headquarters	Gold
Environmental Protection Agency	EPA National Computer Center	Silver
General Services Administration & Department of Labor	Occupational Health & Safety Administration Salt Lake Technical Center	Silver
General Services Administration	Sweetgrass-Coutts Port of Entry	Certified



LEED Registered Federal Buildings

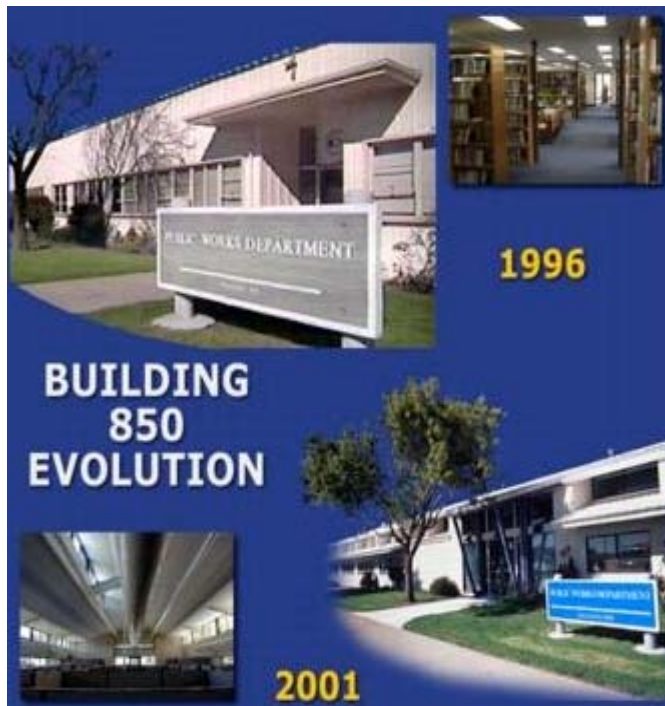
Agency	Number of Registered Buildings
Department of State	3
Department of Agriculture	2
Department of Commerce	1
Department of Defense – Air Force	8
Department of Defense – Navy	17
Department of Energy	13
Department of Health and Human Services	2
Department of Homeland Security	1
Department of Interior	1
Environmental Protection Agency	3
General Services Administration	40
Total	91



Building 850

Port Hueneme, CA

LEED Gold – FY05



- **100% daylighting of all occupied spaces;**
- **Photovoltaic power generation**
- **Solar space heating and domestic hot water heating systems;**
- **Prototype natural-gas heat-pump air conditioning, variable air volume underfloor air distribution, and efficient pulse hot water boilers.**



Carl T. Curtis Midwest Regional Headquarters

Omaha, NE

LEED Gold – FY05



- **Materials acquired within 500 miles. Interior wood acquired from approved forests**
- **Grid-supplied renewable energy supplies 50% of the energy needed in the building**
- **Light sensors, light harvesting, glazing, and shading**



National Computer Center Research Triangle Park, NC LEED Silver – FY05

- **Roof partially covered with photovoltaic array to generate electricity and for mitigating unwanted radiant heat gain.**
- **82% by weight of construction waste sorted and recycled.**
- **Carbon dioxide sensors monitor indoor air quality.**





Salt Lake Technical Center

Salt Lake City, UT

LEED Silver – FY05



- A GSA and DOL effort
- Sensor and dimming mechanisms.
- Recycled building materials
- Accommodations for mass transit, bicycles and car pool vehicles.
- Three-stage cooling and heat recovery system helps to improve energy performance by 47 percent.



Sweetgrass-Coutts Port of Entry

Omaha, NE

LEED Certified – FY05

- **98% of construction waste recycled**
- **22% of water use reduction**
- **47% of materials manufactured within 500 miles**
- **96% of occupied spaces with outside views**





Parachute Team Headquarters, Fort Bragg, North Carolina

SPIRiT Gold



- Reflective pavement
- Stormwater storage cistern for irrigation and stormwater treatment
- 31% potable water savings
- Daylighting
- 17% energy savings through improved building envelope
- Low emitting and recycled content interior materials



- **Developed a simple method for measuring whole building cost and performance which is being implemented by other Federal agencies**
- **Technical Documents:**
 - **Building Cost and Performance Metrics: Data Collection Protocol**
 - **Building Cost and Performance Metrics: Field Guide**

http://www.eere.energy.gov/femp/technologies/sustainable_resources.cfm



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DOE Activities-High Performance Federal Buildings Database

Federal Energy Management Program: High Performance Federal Buildings - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites

Address <http://www.eere.energy.gov/femp/highperformance/> Go Links

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

FEMP

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Federal Energy Management Program


About the Program Program Areas Information Resources Financing Mechanisms Technologies Services Home

High Performance Federal Buildings

Using the Database

- Search by Project Name
- Search by Owner
- Search by Location
- Search by Building Type & Size
- List All Projects
- Detailed Search

Many federal facilities have succeeded in creating high performance buildings that save energy and reduce the environmental impact on our lives. We have captured a sampling of these successes in this High Performance Federal Buildings Database, a database showcasing examples of sustainable building projects in the federal government. Use the database to examine project details or to explore some construction or retrofit ideas for your facility.



FEMP is sponsoring this federal portal to the High Performance Buildings Database. FEMP also supports the [Interagency Sustainability Working Group](#). This database contributes to the working group's purpose of exchanging information about federal agency sustainable design activities as demonstrated in these high performance federal building projects. The High Performance Buildings Database is research sponsored by the U.S. Department of Energy; it seeks to improve building performance measuring methods by collecting data on various factors that affect a building's performance, such as energy, materials, and land use. The database includes information from buildings around the world, ranging from homes and commercial interiors to large buildings and even whole campuses and neighborhoods. These may be certified "green" projects, or simply projects that have one or more notable environmental features. The information has been reviewed for consistency and presentation, but in most cases, the details have not been independently verified.

To find projects of interest, use any of the search options listed on the left or select "List all projects" to see the entire list. Each project description may appear

Search Help More Search Options

EERE Information Center

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www.eere.energy.gov/femp/highperformance



GSA Activities

- Updated guidance on green leasing for GSA solicitations
- Posting Construction Waste Management resource page and LEED Cost Study on the WBDG
- Issuing Expanding Our Approach to Sustainable Design Report

• Alfred A. Arraj U.S. Courthouse in Denver, CO highlighted at the 2005 World Sustainable Building Conference in Tokyo, Japan





- **Green lease specifications and riders for leased buildings—often build-to-suit projects**
- **All major newly constructed buildings achieve at least LEED™ Silver certification.**
- **MOU with the American Institute of Architects**
- ***Federal Green Construction Guide for Specifiers***
- **FY 2005 Proposal Guidelines for Brownfields Assessment, Revolving Loan Fund, and Cleanup Grants gives special consideration for green building**



EPA/DOE Activities

- Labs21 Best Practice Guides
- Purpose: To provide information on best practices for specific technologies and strategies
 - Identify high-priority topics
 - Assign Labs21 lead and solicit industry volunteers
 - Develop guide in an open iterative manner
 - Conduct peer review
 - Publish on website and in print

• http://www.labs21century.gov/toolkit/bp_guide.htm



*LBNL Molecular Foundry
Laboratory*



- **Volume-Build Program**
initiated with USGBC using Prototype submittal
1st Sample project underway
- **Contract Requirements**
continual upgrade of Contract to include or raise the bar
for sustainable design and construction



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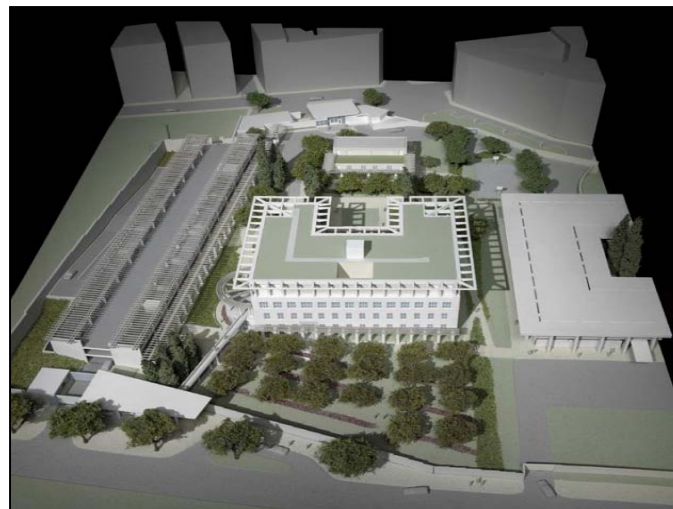
DOS Activities

Photovoltaic Array in operation in Geneva, Switzerland



Sun Shades on all New Office Buildings such as Port-au-Prince, Haiti

Green Roof in Frankfurt, Germany & planned for Athens, Greece





DOD/NAVFAC Activities



- **Online Training: A multimedia, online modular training course (and Web system)**
- **LEED-DoD Antiterrorism Standards Tool**
- **Unified Facilities Guide Specifications (UFGS) Revision**
- **Case studies**





DoD/NAVFAC ACTIVITIES Building Performance Metrics

Measuring...

- Total building potable water use (gal/month & \$/month)
- Total building energy use (kWh/mo, \$/mo & Btu/mo)
- Building maintenance (\$, hrs, # requests by type & # preventive maintenance)
- Solid sanitary waste (cubic yd/mo, ton/mo & 4/mo)
- Environmentally preferable purchasing (\$ all/yr & \$ EPP/yr)
- Occupant health and productivity (turnover, absenteeism, occupant satisfaction and occupant productivity)
- Transportation (regular commute: mpg & miles/week)



http://www.eere.energy.gov/femp/technologies/sustainable_resources.cfm



NASA Activities

- **NASA Sustainable Design Policy**
 - NPR 8820.2E and Facilities Engineering and Real Property Division (FERPD) Policy Letter of 9/5/2003
 - LEED™ Silver certification for major New Construction and repair projects starting in FY06
- Provide Training to Center Personnel on Sustainable Design principles

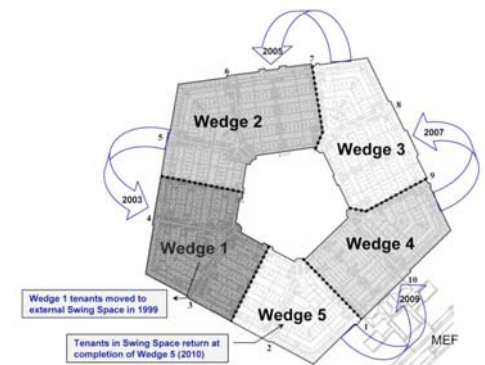


MARSHALL SPACE FLIGHT CENTER
OFFICE BUILDING 4600
RETENTION POND FOR IRRIGATION



DOD/Pentagon Activities

- Providing on-site LEED Workshops
- Finalizing Pentagon *Handbook for the Integration of Sustainability and Constructability*
- Developing a PENREN-specific Environmental Management System (EMS)
- Researching how sustainability can improve employee productivity and reduce operation & maintenance burden.
- Developing a tool to evaluate different products and processes

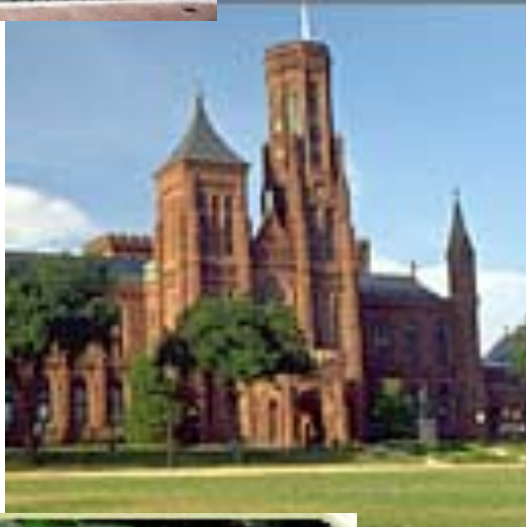




- **Sustainable design included in Commander's Management Review (CMR).**
- **CMR indicates percent of projects achieving Bronze/certified, Silver, Gold and Platinum by each regional Business Center (RBC).**
- **Vertical projects with climate-controlled buildings required to achieve a SPiRiT Gold rating**
- **Renovation, upgrade and rehabilitation projects required to reach a Gold rating unless cost increase puts the project "50% over the replacement" cost threshold.**
- **Revising technical guidance documents to include sustainable features.**



Smithsonian Institution



- Developed draft Directive establishing uniform policy on sustainable design, operations & maintenance
- Incorporated sustainable language in the Smithsonian's specifications
- Included options for cost-effective renewable technologies in statements of work
- Performing site selection for new Museum of African American History and Culture
- Established Cross-Functional Sustainable Design Committee
- Conducting waste water treatment conservation study



- **White House Federal Sustainability Summit – January 2006**
- **Interagency Sustainability MOU**
 - **Setting consistent baseline performance requirements for all Federal agencies in:**
 - » **energy**
 - » **water**
 - » **environmental air quality**
 - » **materials**





Implementation of EPACT 2005

- Develop new standards for federal buildings:
 - Energy performance 30% below ASHRAE 90.1-2004
 - Sustainability principles into design and construction
 - Cost-effective water-saving measures
- Disseminate compliance tools, training, information:
 - LEED-NC, LEED-EB, LEED-H
 - Energy Star homes
 - Efficient equipment and building components
- Mobilize A&E community through assignable tax deduction
- Reporting requirements & follow-up for performance assurance



Conclusion

**“When the final scorecard is tallied,
shame on us if it’s not a field of green.”**

**– Clay Johnson III
Deputy Director for Management
Office of Management and Budget**

